SEQUENCE LISTING

<110> Birkett, Ashley J.

<120> INFLUENZA IMMUNOGEN AND VACCINE

<130> ICC 127.0 4564/84273

<140> NOT YET ASSIGNED
<141> 2002-02-21

<150> 09/930,915
<151> 2001-08-15

<160> 83

<170> PatentIn version 3.1

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<212> PRT
<213> Hepatitis B virus

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20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

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Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
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Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
    50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Gln Asp Pro Ala
65                  70                  75                  80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
                85                  90                  95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145                 150                 155                 160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
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Arg Ser Gln Ser Arg Glu Ser Gln Cys
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            20                  25                  30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
    50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65                  70                  75                  80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Val Gly Leu Lys
                85                  90                  95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145                 150                 155                 160

Arg Thr Pro Ser Pro Arg Arg Arg Pro Ser Gln Ser Pro Arg Arg Arg
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Arg Ser Gln Ser Arg Glu Ser Gln Cys
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Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp
    50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Pro Ala
65                  70                  75                  80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val Gly Leu Lys
                85                  90                  95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
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Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
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Gln Ser Arg Glu Ser Gln Cys
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<213> Marmota monax

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            20                  25                  30
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Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
    50                  55                  60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65                  70                  75                  80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
                85                  90                  95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
            100                 105                 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
145                 150                 155                 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
                165                 170                 175

Arg Arg Arg Arg Ser Gln Cys
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<213> Spermophilus variegatus

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Thr Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Asp Met Asp
            20                  25                  30

Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu Asn Phe
        35                  40                  45

Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp Thr Ala
    50                  55                  60
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Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys Ser Pro
65                  70                  75                  80

His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu Leu Thr
                85                  90                  95

Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val Arg Arg
            100                 105                 110

Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val Arg Gln
        115                 120                 125

Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gly His Thr Val
    130                 135                 140

Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Ala Pro
145                 150                 155                 160

Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu His Thr
                165                 170                 175

Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro Arg Arg
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Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
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Arg Ser Gln Ser Pro Ala Ser Asn Cys
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<210> 9
<211> 24
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<213> Hepatitis B virus

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<223> Xaa at position 1 is methionine or absent. If methionine then Xa
a in positions 2 through 8 are not absent

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 is serine or absent. If serine then Xaa in pos
itions 3 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa in p
ositions 4 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa in p
ositions 5 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa at position 5 is threonine or absent. If threonine than Xaa
in positions 6 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic acid t
hen Xaa in positions 7 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in pos
ition 8 is not absent.

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa at position 8 is glutamic acid or absent.

<220>

<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine or absent. If glycine then Xaa in position 15 is not absent.

<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in positi on 17 is cysteine, serine or alanine. If Xaa in position 17 is p resent then positions 15 through 16 are not absent.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> Xaa at position 18 is arginine or absent. If arginine then Xaa i n positions 15 through 17 are not absent.

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa at position 19 is absent or present, if present Xaa in positi on 19 is cysteine, serine or alanine. If Xaa in position 19 is p resent then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa at position 20 is asparagine or absent. If asparagine then X aa in positions 15 through 19 are not absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid or absent. If aspartic acid then Xaa in positions 15 through 20 are not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent. If serine then Xaa in po sitions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent. If serine then Xaa in po sitions 15 through 22 are not absent.

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa at position 24 is aspartic acid or absent. If aspartic acid t
hen Xaa in positions 15 through 23 are not absent.

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1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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<213> Influenza A virus

<400> 10

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
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Arg Cys Asn Gly Ser Ser Asp
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<210> 11
<211> 23
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<213> Influenza A virus

<400> 11

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
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Arg Cys Asn Asp Ser Ser Asp
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<210> 12
<211> 23
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<213> Influenza A virus

<400> 12

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
1 5 10 15

Arg Ala Asn Asp Ser Ser Asp
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<210> 13

<211> 23
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<400> 13

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser
1 5 10 15

Arg Ser Asn Asp Ser Ser Asp
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<211> 23
<212> PRT
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<400> 14

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser
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Arg Cys Asn Asp Ser Ser Asp
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<211> 23
<212> PRT
<213> Influenza A virus

<400> 15

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
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Arg Ser Asn Asp Ser Ser Asp
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<210> 16
<211> 23
<212> PRT
<213> Influenza A virus

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1 5 10 15

Arg Ala Asn Asp Ser Ser Asp
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<210> 17
<211> 23
<212> PRT
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<400> 17

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp
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<210> 18
<211> 24
<212> PRT
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<400> 18

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp
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<210> 19
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<212> PRT
<213> Influenza A virus

<400> 19

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp
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<211> 35
<212> PRT
<213> Influenza A virus

<400> 20

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
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Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile
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<210> 21
<211> 24
<212> PRT

<213> Influenza A virus

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Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ala Arg Ala Asn Asp Ser Ser Asp
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<210> 22
<211> 24
<212> PRT
<213> Influenza A virus

<400> 22

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Ala Asn Asp Ser Ser Asp
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<210> 23
<211> 24
<212> PRT
<213> Influenza A virus

<400> 23

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ala Arg Cys Asn Asp Ser Ser Asp
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<210> 24
<211> 24
<212> PRT
<213> Influenza A virus

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Cys Arg Ser Asn Asp Ser Ser Asp
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<210> 25
<211> 24
<212> PRT
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<400> 25

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Ser Arg Cys Asn Asp Ser Ser Asp
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<210> 27
<211> 55
<212> DNA
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<220>
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<210> 28
<211> 22
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<213> Hepatitis B virus

<400> 28
gggccatgga catcgaccct ta 22

<210> 29
<211> 29
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<400> 29
gcggaattcc ttccaaatta acacccacc 29

<210> 30
<211> 38
<212> DNA
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<213> Hepatitis B virus

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<210> 32
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<210> 33
<211> 31
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<210> 34
<211> 39
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<210> 36
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<400> 36
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<210> 39
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<212> DNA
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<210> 40
<211> 37
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<400> 40
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<210> 41
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<400> 41
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<210> 42
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<213> Hepatitis B virus

<400> 42
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<210> 43
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<213> Hepatitis B virus

<400> 43
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<210> 44
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Ser Arg Cys Asn Asp Ser Ser Asp Glu Leu
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<212> DNA
<213> Influenza A virus

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cgattcaagt gatgagct 78

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<212> DNA
<213> Influenza A virus

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tcagcagaga 70

<210> 47
<211> 26
<212> PRT
<213> Influenza A virus

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Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
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Cys Arg Ser Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 48
<211> 78
<212> DNA
<213> Influenza A virus

<400> 48
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cgattcaagt gatgagct 78

<210> 49
<211> 70
<212> DNA
<213> Influenza A virus

<400> 49

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tcagcagaga 70

<210> 50
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<212> PRT
<213> Influenza A virus

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Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ala Arg Ala Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 51
<211> 78
<212> DNA
<213> Influenza A virus

<400> 51
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tgatagctct gacgagct 78

<210> 52
<211> 70
<212> DNA
<213> Influenza A virus

<400> 52
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ttaacagaga 70

<210> 53
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<212> PRT
<213> Influenza A virus

<400> 53

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1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu
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<213> Influenza A virus

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tgattcttcc gacgagct 78

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ttaacaggct 70

<210> 56
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<212> PRT
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<400> 56

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1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 57
<211> 78
<212> DNA
<213> Influenza A virus

<400> 57
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cgattcaagt gatgagct 78

<210> 58
<211> 70
<212> DNA
<213> Influenza A virus

<400> 58
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tcagcagaga 70

<210> 59
<211> 26
<212> PRT
<213> Influenza A virus

<400> 59

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1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 60
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<212> DNA
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cgattcaagt gatgagct 78

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tcagcagaga 70

<210> 62
<211> 22
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<400> 62
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<210> 63
<211> 24
<212> PRT
<213> Hepatitis B virus

<400> 63

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
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Cys Arg Cys Asn Asp Ser Ser Asp
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<210> 64
<211> 27
<212> PRT
<213> Hepatitis B virus

<400> 64

Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp
1 5 10 15

Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu

20 25

<210> 65
<211> 27
<212> PRT
<213> Hepatitis B virus

<400> 65

Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp
1 5 10 15

Gly Ala Arg Ala Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 66
<211> 35
<212> PRT
<213> Hepatitis B virus

<400> 66

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile
35

<210> 67
<211> 35
<212> PRT
<213> Hepatitis B virus

<400> 67

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile
35

<210> 68
<211> 18
<212> PRT
<213> Influenza A virus

<400> 68

Met Gly Ser Arg Cys Asn Asp Ser Ser Asp Ile Asp Pro Tyr Lys Glu
1 5 10 15

Phe Gly

<210> 69
<211> 59
<212> DNA
<213> Influenza A virus

<400> 69
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<210> 70
<211> 16
<212> PRT
<213> Influenza A virus

<400> 70

Met Gly Cys Asn Asp Ser Ser Asp Ile Asp Pro Tyr Lys Glu Phe Gly
1 5 10 15

<210> 71
<211> 52
<212> DNA
<213> Influenza A virus

<400> 71
gcgccatggg gtgtaacgat tcaagtgaca tcgaccctta taaagaattt gg 52

<210> 72
<211> 11
<212> PRT
<213> Hepatitis B virus

<400> 72

Glu Leu Leu Gly Trp Leu Trp Gly Ile Asp Ile
1 5 10

<210> 73
<211> 14
<212> PRT
<213> Hepatitis B virus

<400> 73

Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile Asp
1 5 10

<210> 74
<211> 27
<212> PRT
<213> Hepatitis B virus

<400> 74

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Asp
20 25

<210> 75
<211> 27
<212> PRT
<213> Hepatitis B virus

<400> 75

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu Asp
20 25

<210> 76
<211> 38
<212> PRT
<213> Hepatitis B virus

<400> 76

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile Asp Ile Asp
35

<210> 77
<211> 549
<212> DNA
<213> Hepatitis B virus

<400> 77
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gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt 180

tgctgggggg aactaatgac tctagctacc tgggtgggtg ttaatttgga agatccagcg 240

tctagagacc tagtagtcag ttatgtcaac actaatatgg gcctaaagtt caggcaactc 300

ttgtggtttc acatttcttg tctcactttt ggaagagaaa cagttataga gtatttggtg 360

tctttcggag tgtggattcg cactcctcca gcttatagac caccaaatgc ccctatccta 420

tcaacacttc cggagactac tgttgttaga cgacgaggca ggtcccctag aagaagaact 480

ccctcgcctc gcagacgaag gtctcaatcg ccgcgtcgca gaagatctca atctcgggaa 540

tctcaatgt 549

<210> 78
<211> 555
<212> DNA
<213> Hepatitis B virus

<400> 78
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tctgacttct ttccttccgt acgagatctc ctagacaccg cctcagctct gtatcgagaa 120

gccttagagt ctcctgagca ttgctcacct caccatactg cactcaggca agccattctc 180

tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgca agatccagca 240

tccagagatc tagtagtcaa ttatgttaat actaacatgg gtttaaagat caggcaacta 300

ttgtggtttc atatatcttg ccttactttt ggaagagaga ctgtacttga atatttggtc 360

tctttcggag tgtggattcg cactcctcca gcctatagac caccaaatgc ccctatctta 420

tcaacacttc cggaaactac tgttgttaga cgacgggacc gaggcaggtc ccctagaaga 480

agaactccct cgcctcgcag acgcagatct caatcgccgc gtcgcagaag atctcaatct 540

cgggaatctc aatgt 555

<210> 79
<211> 555
<212> DNA
<213> Hepatitis B virus

<400> 79
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tctgacttct ttccttccgt cagagatctc ctagacaccg cctcagctct gtatcgagaa 120

gccttagagt ctcctgagca ttgctcacct caccatactg cactcaggca agccattctc 180

tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgga agatccagca 240

tctagggatc ttgtagtaaa ttatgttaat actaacgtgg gtttaaagat caggcaacta 300

ttgtggtttc atatatcttg ccttactttt ggaagagaga ctgtacttga atatttggtc 360

tctttcggag tgtggattcg cactcctcca gcctatagac caccaaatgc ccctatctta 420

tcaacacttc cggaaactac tgttgttaga cgacgggacc gaggcaggtc ccctagaaga 480

agaactccct cgcctcgcag acgcagatct ccatcgccgc gtcgcagaag atctcaatct 540

cgggaatctc aatgt 555

<210> 80
<211> 549
<212> DNA
<213> Hepatitis B virus

<400> 80
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gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt 180

tgctggggag acttaatgac tctagctacc tgggtgggta ctaatttaga agatccagca 240

tctagggacc tagtagtcag ttatgtcaac actaatgtgg gcctaaagtt cagacaatta 300

ttgtggtttc acatttcttg tctcactttt ggaagagaaa cggttctaga gtatttggtg 360

tcttttggag tgtggattcg cactcctcca gcttatagac caccaaatgc ccctatccta 420

tcaacgcttc cggagactac tgttgttaga cgacgaggca ggtcccctag aagaagaact 480

ccctcgcctc gcagacgaag atctcaatcg ccgcgtcgca gaagatctca atctcgggaa 540

tctcaatgt 549

<210> 81
<211> 549
<212> DNA
<213> Marmota monax

<400> 81
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gaatttttctt cctttggact tctttcctga tcttaatgct ttggtggaca ctgctactgc 120

cttgtatgaa gaagaactaa caggtaggga acattgctct ccgcaccata cagctattag 180

acaagcttta gtatgctggg atgaattaac taaattgata gcttggatga gctctaacat 240

aacttctgaa caagtaagaa caatcattgt aaatcatgtc aatgatacct ggggacttaa 300

ggtgagacaa agtttatggt ttcatttgtc atgtctcact ttcggacaac atacagttca 360

agaatttttа gtaagttttg gagtatggat caggactcca gctccatata gacctcctaa 420

tgcacccatt ctctcgactc ttccggaaca tacagtcatt aggagaagag gaggtgcaag 480

agcttctagg tcccccagaa gacgcactcc ctctcctcgc aggagaagat ctcaatcacc 540

gcgtcgcag 549

<210> 82
<211> 651
<212> DNA
<213> Spermophilus variegatus

<400> 82
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tccaagctgt gccttggatg gctttgggac atggacatag atccctataa agaatttggt 120

tcttcttatc agttgttgaa ttttcttcct ttggactttt ttcctgatct caatgcattg 180

gtggacactg ctgctgctct ttatgaagaa gaattaacag gtagggagca ttgttctcct 240

catcatactg ctattagaca ggccttagtg tgttgggaag aattaactag attaattaca 300

tggatgagtg aaaatacaac agaagaagtt agaagaatta ttgttgatca tgtcaataat 360

acttggggac ttaaagtaag acagacttta tggtttcatt tatcatgtct tacttttgga 420

caacacacag ttcaagaatt tttggttagt tttggagtat ggattagaac tccagctcct 480

tatagaccac ctaatgcacc cattttatca actcttccgg aacatacagt cattaggaga 540

agaggaggtt caagagctgc taggtccccc cgaagacgca ctccctctcc tcgcaggaga 600

aggtctcaat caccgcgtcg cagacgctct caatctccag cttccaactg c 651

<210> 83
<211> 17
<212> PRT
<213> Influenza B virus

<400> 83

Asn Asn Ala Thr Phe Asn Tyr Thr Asn Val Asn Pro Ile Ser His Ile
1 5 10 15

Arg